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ADAPTIVE STRUCTURATION THEORY VIEW OF POST IMPLEMENTATION KNOWLEDGE MANAGEMENT FOR ENTERPRISE SYSTEMS

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Abstract

Organizations invest substantial resources in Enterprise Systems (ES) expecting positive outcomes for the organization and its functions. Yet, many ES projects have reported nil or detrimental impacts. The effective management of ES-related knowledge has been suggested as a critical success factor for these ES projects in ES implementations. This paper suggests a theoretical model purporting the importance of a lifecycle-wide understanding of knowledge management for Enterprise Systems. The paper provides a path model based on the Adaptive Structuration Theory that captures the dynamic post-implementation knowledge management.

Keywords: Adaptive Structuration Theory, Knowledge Management, Enterprise Systems.

1 INTRODUCTION

Organizations make large investments in acquiring Enterprise Systems (ES) expecting positive impacts to the organization and its functions. Yet, there exists much controversy surrounding the 'potential' impacts of these systems with some studies reporting positive impacts of ES in organizations, while others have shown nil or detrimental impacts. Managing ES are said to be one of the most challenging developments in corporate use of information technology. Information Systems research has contributed to the better management of ES by identifying the salient factors influencing Enterprise System performance where managing knowledge has been suggested as one of the most influential success factors. Unlike some critical success factors where the influence is prevalent at the implementation phase, managing knowledge has the potential to influence all phases of the Enterprise System lifecycle beyond implementation. There have been reports of organizations achieving greater success with ES through effective management of knowledge (Al-Mashari & Zairi, 2000; McNurlin, 2001). Despite having identified managing knowledge as a key critical success factor for Enterprise Systems in late 1990s, our understanding of the impact of knowledge on Enterprise Systems success is still imprecise, with many fundamental questions and enduring issues remain largely ignored. Seeking answers to these questions not only would increase the cumulative tradition of research, but also would benefit the industry.

This research-in-progress paper aims to provide a theoretical underpinning for the relationship between Knowledge Management and Enterprise Systems, specifically focusing on the post-implementation phase of the ES-lifecycle. This research attempts to provide answers to five key issues and questions related to lifecycle-wide Knowledge Management. They include: (1) managing knowledge for Enterprise System is an on-going lifecycle-wide activity beyond the implementation, where (2) knowledge is generated and accumulated through various phases of knowledge management, with (3) the involvement of many internal and external stakeholders. Moreover, in order to facilitate a cumulative tradition of research, we see the value of (4) providing a theoretical

underpinning for the relationship between knowledge and Enterprise Systems performance that adequately captures the on-going dynamically changing nature of knowledge, the key stakeholders and the multi-phased knowledge management process. Moreover, thought it is tautological, (5) research and practice alike would benefit from an empirical assessment of the positive impacts of knowledge on contemporary IS (where ES is an archetype). The authors suggest that applicability of the Adaptive Structuration Theory (AST) of (DeSanctis & Poole, 1994) to adequately explain the relationship between knowledge for Enterprise Systems. The paper begins with a review of literature on knowledge and knowledge for ES demonstrating the concept of ES-knowledgebase. The theoretical model is then introduced, followed by analysis of 20 prior studies to demonstrate the value of our research model. The paper concludes with the key contributions and a brief overview of the research outlook.

2 LITERATURE REVIEW

For the purpose of this paper we do not engage in the epistemological debate over the definition of knowledge as it does not add value to the research and practical interest on managing knowledge. In terms of defining knowledge, this study provides the simple logic of recognition that there are many types of knowledge relevant to the ES in organizations. In prior studies, knowledge is defined as a multifaceted concept with multilayered meanings (Blackler, 1995; Nonaka, 1994), as a fluid mix of framed experience, values, contextual information and expert (Davenport,1998), as what has been learned from experience or study (Schulz, 2001), as an information that possessed in minds of individuals (Alavi & Leidner, 2001), while (Sutton, 2001) believes that knowledge is transmitted to others through some form of communication medium in a systematic form. Hence, knowledge often becomes embedded, not only in documents and repositories, but also in organizational routines, processes, practices and norms.

Managing an Enterprise System is a knowledge intensive task that necessarily draws upon the experience of a wide range of people with diverse knowledge capabilities (Sedera, Gable, & Chan, 2004). ES literature suggests that knowledge must be carefully managed throughout the ES lifecycle in order to maximize benefits (Sedera, Gable, & Chan, 2003). Rosemann and Chan (2000) identify five different types of knowledge that are essential for the successful implementation of Enterprise Systems. The five types of knowledge include: business knowledge, technical knowledge, product knowledge, company-specific knowledge and project knowledge. Exploring the Rosemann and Chan view, (Sedera, Gable, & Chan, 2003) empirically demonstrated two types of knowledge: (1) internal knowledge and (2) external knowledge. Internal knowledge resides within the employees of the client organization, embedded in behaviours, procedures and the ES software. External knowledge, however views from outside the firm, such as from consultants and the software vendors. Typically there are three key players taking part during ES implementation and ongoing support: (i) the client organization, (ii) the ES software vendor, and (iii) an external consultant or implementation partner (G. G. Gable, Heever, Erlank, & Scott, 1997; Guy G. Gable, Scott, & Davenport, 1998; Soh, Kien, & Tay-Yap, 2000;Guy G. Gable, 2005; Sedera, 2006), and two types of ES knowledge: (1) knowledge of the software and (2) knowledge of the client organization (Sedera, Gable, & Chan, 2003). According to (Birbeck & Stewart, 2004), vendors will influence the client in a number of ways since when an Enterprise Systems innovation is adopted by a client, the changes to that organization can be many.

Knowledge management is often explicitly or implicitly conceived as a systematic process consisting of multiple phases. Akin to the Knowledge Management process of Alavi and Leidner (2001), this study conceptualizes the Knowledge Management process as four phases: (1) Knowledge creation, (2) Knowledge retention, (3) Knowledge transfer, and (4) Knowledge application; where the four phases represent the full lifecycle of Knowledge Management activities. Pentland (1995, p.5) defines the

knowledge management process as *"an on-going set of activities embedded in the social and physical structure of the organization with knowledge as their final product"*. Consistent with Pentland (1995), we argue that each phase is distinctly different yet inter-related with *creation*, *retention*, and *transfer* each making a unique contribution to the *ES-knowledgebase* which is thereafter *applied*. Similar to (Wyssusek, 2005), this study believes that knowledgebase in ES perspective needs a sort of concepts and theories. However, (Ergazakis, Karnezis, Metaxiotis, & Psarras, 2002) argue that up till now, there is not a universally accepted standard methodology for Knowledge Management that will contribute much more to the enterprise success. Thus, this study seeks to develop a theoretical perspective with the intention of understand the impact of Knowledge Management on Enterprise Systems success.

3 THE THEORY

Adaptive Structuration Theory (AST), derived from Anthony Giddens's Structuration Theory (Giddens, 1984) addresses issues of human behaviour in the context of technology based on social structure. In other words, the theory looks into the process of human usage of computer systems and at the nature of group-computer interaction (Poole & DeSanctis, 1989). With the main focus of communication using information technology, the theory highlights the concepts of *appropriation* and *structuration*. In addition, the AST can be considered as a prime starting point to draw links between individuals and organizational learning (Argyris & Schon, 1978). This is due to the core concept in AST that address issues of group interaction with technology as the basis of human activity (DeSanctis & Poole, 1994).

3.1 Theoretical Perspectives on the Relation between KM and ES

This section discusses three theories applicable in the context of Knowledge Management (KM) and Enterprise Systems (ES). The theories are Complex Adaptive Systems (CAS), Structuration Theory (ST) and Adaptive Structuration Theory (AST). Table below shows the basic comparison of these three theories.

	Complex Adaptive System (CAS)	Structuration Theory (ST)	Adaptive Structuration Theory (AST)
Main Focus	Dynamic behaviour and systems environment. Collective behaviour emerges from interaction of subsystems over time	Relationship between individuals and society. Proposed the concept of structuration from the duality of structure	Adapted Giddens's theory to study the interaction of groups with information technology. Uses two main concepts, which are structuration and appropriation
Limitation	Failed to explain the co-evolution of behaviour and technology	Do not consider the structure of work tasks and the organizational environment	Unknown

Table 1. Comparison of CAS, ST and AST (Holweg & Pil, 2008; M. R. Jones & Karsten, 2008)

3.1.1 Complex Adaptive Systems (CAS)

Complex Adaptive Systems was proposed by Holland, adapted on the concepts of general systems theory (Ackoff, 1971; Choi, Dooley, & Rungtusanatham, 2001; Holweg & Pil, 2008). According to (Holweg & Pil, 2008), the CAS consists of a network of interacting, independent and adaptive agents, and studying the dynamic behaviour and response of systems. As this theory applies changing and learning from experience, the CAS is said capable to understand the adaptive nature of system. However, the co-evolution of behaviour and the use of technology to drive system change are not covered.

3.1.2 Structuration Theory (ST)

The Structuration Theory was proposed by British sociologist, Anthony Giddens to address fundamental problems in social sciences. This theory emphasizes that a social structure is continuously being created by everyday social practice. Giddens Structuration Theory has a number of attractions. It is mentioned that more than 300 IS papers have cited to Giddens (M. R. Jones & Karsten, 2008). Despite the high numbers of citation, this theory is still lack of attention to technology. The lack of Giddens's Structuration Theory have derived Adaptive Structuration Theory, to address the mutual influence of technology and social processes (M. R. Jones & Karsten, 2008). Adaptive Structuration Theory (AST) gains credibility because of its connection to Giddens's theory with focus on the complex interplay between social and technical that provides a broad understanding of the system. Therefore, AST is able to overcome the limitations of previous structurational approaches. This principle is actually related to the concept of Knowledge Management (KM), referring to the social interaction and organizational knowledge. For this reason, we believe that the theoretical background of this AST provides sufficient groundings to accommodate the knowledgebase concept between KM and ES success.

In applying AST to the ES research context, we argue that: (1) AST helps to define the ES-knowledgebase (using the concept of *structures*), (2) AST captures the social interaction that employees have with the ES-knowledgebase (using the concept of *sources of structures*), (3) AST expands the application of the ES-knowledgebase (Using the concept of *Appropriation*), (4) AST accommodates the multi-stakeholders involvement of ES-knowledgebase (using the concept of *consensus*) and finally, the application of AST (5) assists to assess the relationship between ES-knowledgebase and ES success. In summary, the table below demonstrates the relationship between the terminologies.

Knowledge Management		AST application
ES-knowledgebase	→	Structures
Contributors to the ES-knowledgebase	→	Sources
Application	→	Appropriation

Table 2. Application of Adaptive Structuration Theory (AST)

The section below provides further details of the application of AST to assess the hypothesized relationship.

3.2 Defining the ES-knowledgebase

Establishment and maintenance of an ES-knowledgebase is an important goal – When engaging external parties, organizations typically have goals that go beyond the successful implementation of the new system; they also have the less tangible goal of acquiring knowledge pertaining to implementation, operation, maintenance, and training. Figure 1 depicts our conceptualization of the ES-knowledgebase. We believe that the term of knowledgebase needs to consider the ES lifecycle, the knowledge sources from three stakeholders identified by (Guy G. Gable, Scott, & Davenport, 1998), KM processes recognized by (Alavi & Leidner, 2001; Sedera, 2006) and the knowledge types (Davenport, 1998; Sedera, Gable, & Chan, 2004). The knowledgebase is created by the client organization, ES-vendor and the consultants (knowledge sources), where they bring knowledge software-specific knowledge, business process knowledge and organization knowledge to bear.

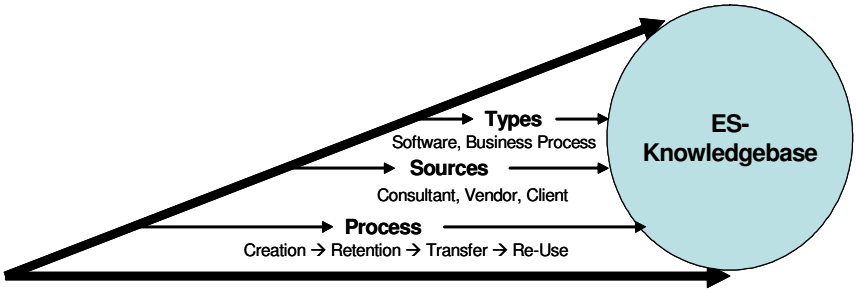

Figure 1. Contributing to the ES-knowledgebase

In this study, we define ES-knowledgebase as a combination of knowledge from software and business process that brought to bear by consultant, vendor and client in the organization through the process of knowledge creation, knowledge retention, knowledge transfer and knowledge re-use. DeSanctis and Poole (1994) define structures broadly as technology procedures, skills, knowledge that influences the engagement of the system in business information processes, such as procurement and order fulfillment. They suggest six major sources of structures that exist in an organization involved in the interaction process, includes of (i) system, (ii) system outputs, (iii) task, (iv) task outputs, (v) environment, and (vi) environment outputs. Using the guidelines of AST, in the research context, the software knowledge and business process knowledge can be defined as ES-knowledgebase structures.

Burton-Jones and Straub (2006) highlighted the importance of capturing the use of the system for the task through deep structure usage. In AST, this process is captured within *structuratio*n (Giddens, 1984), a fundamental underpinning in AST, which posits that systems and structures exist in a dual relationship with each other such that they produce and reproduce each other in an ongoing cycle. This dynamic, referred to as the structuration and embedded within the appropriation process, captures the social phenomena of organizational change that emerge over time as users apply specific technology-based rules, resources or norms, within specific contexts, at specific points in time. When these structures are applied through another process named *appropriation*, they may be modified, enhanced, or combined with manual procedures. Similar to the concept of attractors (from Carroll et al. 2003) in the model of technology appropriation (Carroll et al. 2002b), it is conceived that the adequacy of these structures, captured through the goodness of the ES-knowledgebase and its information initiates the process of appropriation.

3.3 Application of the ES-knowledgebase

Extending the above discussion, the authors define appropriation as the application, adoption and adaptation (Carroll et al. 2002a) of structures (DeSanctis and Poole, 1994) during their interaction. It is further posited that the dimensions of appropriation collectively represent a quantitative assessment of interaction. The notion of "interaction" in our study is a collection of dynamic and iterative appropriation processes that occur between users and the contemporary IS. Once the ES-knowledgebase is created; we argue that when employees apply the ES-knowledgebase with full ownership in their interactions with the Enterprise System, the ES-knowledgebase and the Enterprise System change (see Figure 2). The ES-knowledgebase structures are continuously produced and reproduced as the ES interaction process occurs.

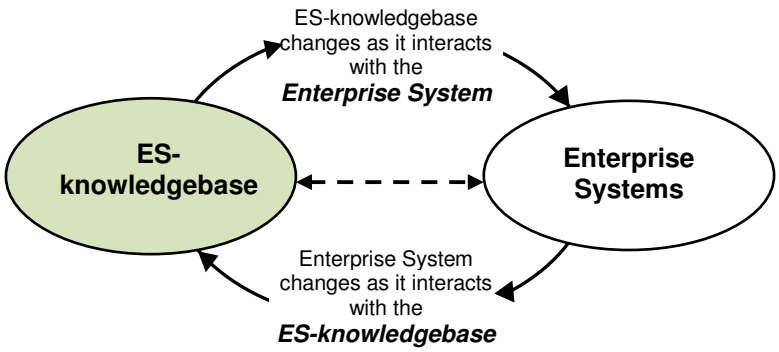

Figure 2. The interaction between ES-knowledgebase and ES

3.4 Application of Adaptive Structuration Theory (AST)

Applying the Adaptive Structuration Theory, we argue that the ES-knowledgebase to have a positive impact on the ES, the ES-knowledgebase must be appropriated in a stable manner. For *appropriation* to be stable, there should exist: (1) 'faithful' adherence to the ES-knowledgebase, (2) a high level of *consensus on appropriation* of the ES-Knowledgebase, and (3) positive *attitudes* towards the ES-knowledgebase. It is noted that the concept of stability is not necessarily associated with a positive or negative connotation concerning *structure* usage[1]. The measurement of the level of appropriation is captured through these dimensions; the (1) Attitude towards appropriation, the (2) Faithfulness of appropriation, (3) Instrumental uses and the (4) consensus (DeSanctis and Poole, 1994).

Attitude captures the user's feelings and emotions of users as he or she applies and adopts the structures highlighted in Table 2 for whatever purposes. It does not include the user's perceptions about the goodness of the structures. Attitude is considered to be the vehicle that reflects the stability of the appropriation process (Gopal, Bostrom, & Chin, 1992). The second dimension ***faithfulness*** captures the intentions for the system as perceived by its users. It is important as the authors compare and align these intentions for the system as perceived by its users against those goals and values as posited by its developers(Chin, Gopal, & Salisbury, 1997). These goals and values for the system, as described by its developers are called the spirit. Faithful Appropriations are consistent with the spirit, whereas unfaithful appropriations are out of line with the spirit of the technology. Unfaithful appropriations help explain how IS structures do not always bring the outcomes (IS-impacts) that designers intended (Chin, Gopal, & Salisbury, 1997). ***Instrumental uses*** capture the extent of one uses the system. It is important to understand the different purposes in which the users employ the systems for in an attempt to identify any deviant or defiant use. The instrumental uses dimension is different from faithfulness as they are constrained by the features of the system and system features are underpinned by its values and goals captured in faithfulness. Stakeholders may choose to appropriate the features for different instrumental uses, or purposes such as tasks or exploratory (DeSanctis and Poole, 1994). The final dimension is ***consensus.*** As mentioned earlier, the ES-knowledgebase will be employed by multiple user cohorts. It is tautological that these cohorts possess diverse – at times

[1] However, the proponents of AST appear to assume implicitly that stable appropriation is more likely to reflect a positive rather than a negative experience for a group, because the intended effects of the use of the knowledge-base are positive in nature.

incongruent –requirements. In applying the ES-knowledgebase, the user cohorts will apply the ES-knowledgebase for a diverse range of activities. The consensus of the employees measures the extent that the ES-knowledgebase accommodates the needs and demands of all employee cohorts. Using the AST consensus, we expect to measure the extent that the ES-knowledgebase accommodates the requirements of the multiple stakeholders.

Based on Adaptive Structuration Theory, the relationship between the ES-knowledgebase and ES-Success is depicted in Figure 3 as a causal model. We hypothesize that having an adequate ES-knowledgebase in place, while necessary, is not sufficient. In order to gain the maximum positive effects of the ES-knowledgebase on ES-Success, the ES-knowledgebase must be "appropriated".

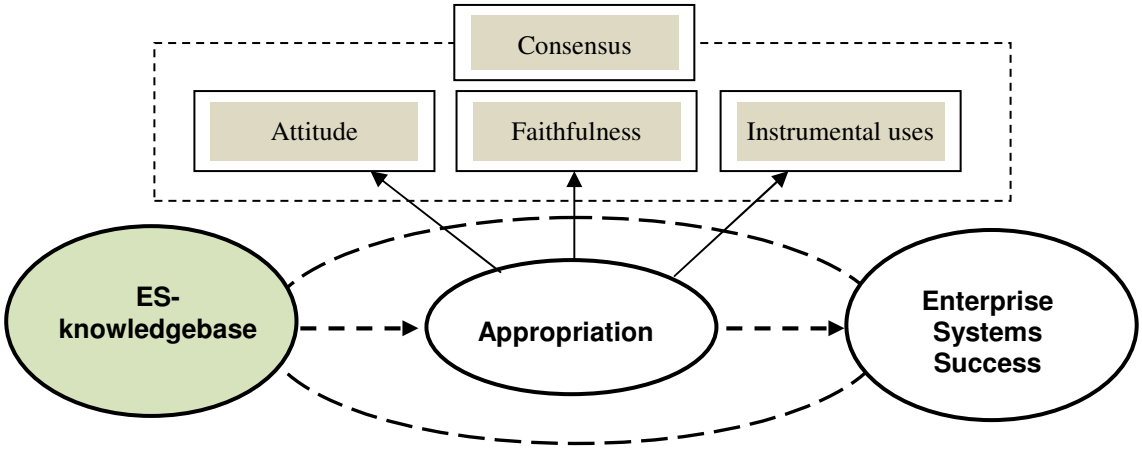

Figure 3. Application of ES-Knowledgebase for Enterprise Systems

It is noted that this research model is a linear representation (reduction) of the complex, dynamic and iterative structuration process, in which the organizational groups, structures (ES-knowledgebase), and the system (ES) interact to produce and reproduce social systems that evolve continually. The potential limitations from operationalizing a complex construct like appropriation as a variable that mediates a linear relationship between the ES-knowledgebase and ES-Success are acknowledged. Nonetheless, any attempt at operationalization and quantification necessitates simplification, and it is believed that this study represents the first attempt to operationalize the AST 'Appropriation' construct in the context of Information Systems[2].

4 LITERATURE META ANALYSIS

In order to demonstrate the goodness of our conceptualization above, in depicting the application of the ES-knowledgebase (and its interaction with the Enterprise System), we next analyze 20 prior studies. The studies were selected employing a keyword search of "knowledge management" and "Enterprise Systems" in the popular academic literature databases such as ProQuest, ScienceDirect and IEEE Xplore. The studies are examined using the following criteria: (1) Knowledge Management focus, (2) Enterprise Systems lifecycle phases, (3) stakeholder group, (4) theory and (5) empirical evidence. This meta-analysis is conducted with a collection of those studies based on relationship

[2] It is further noted that the continuous interaction of structures, agents and the system, is perhaps better measured through a cross-sectional survey than through any longitudinal design.

between KM and ES (see Table 3 for details). Using the data depicts from table 3, we make the following observations.

4.1 Key Observations

It is revealed that none of the prior studies provide a holistic evaluation with all knowledge management phases, both during and post implementation phases of the lifecycle, providing a theoretical explanation with empirical data. Furthermore, it is observed that only six studies considered providing a theoretical perspective, many with a minimal discussion. On a positive note, all of the studies provided some degree of discussion on the KM process. As we argued earlier, the vast majority of the studies only made references to the implementation lifecycle – without paying much attention to the post implementation knowledge management aspects. Overall, it is argued that the path model provided with the AST model is capable of providing answers to aforementioned key dimensions explaining the dynamic relationship between knowledgebase and Enterprise Systems. The sections below provide further discussion on the meta-analysis.

As discussed in the introduction, many ES studies focus on the implementation phase. The same trend can be seen in relation to the knowledge management aspects where majority of the studies focussing only at the implementation phase. It is widely argued that the knowledge brought-to-bear at the time of the implementation vastly change as a result of employees interacting with the Enterprise System in the post-implementation phase. Certainly, there are going to be ongoing changes and adjustments to optimize the way the system is operating and to improve the way it supports their business. The issues are: (1) How can we measure the performance of ES once the system is implemented? (2) How can we identify the opportunities and the weaknesses of the training within organization? (3) How can we improve, update and make adjustment to the system or its business process? (4) How can we detect the inefficiencies of the systems or its under-performance after the massive investment that we already done? These questions can be answered by considering the ES post-implementation aspect.

Identifying appropriate stakeholders is one of the first criteria to be fulfilled to build successful ES. A few examples of stakeholders are clients, vendors, consultants, managers, service providers and others. The success of any ES is effectively reflected by its views. These views are drive from stakeholders, which are different stakeholders will give different views. However, the number of studies that consider the entire key stakeholder is limited, while many studies refer to a single stakeholder group. From the selected studies, it clearly shows that consultant group is referred as the most common stakeholder group that assists and provides knowledge in the implementation of the ES. This is followed by user as the second major group, while project team group is the third. Based on the role of these three common groups, we consider that they are the most important people, which interact with the ES directly, either in a pre-implementation, during the implementation or in the post-implementation phases. Therefore, all key stakeholder views should be considered. Though, as indicated in the table, some studies also detail their work in other cohorts, which based on internal aspect in organizations that represent the influence of KM on ES.

Source	Knowledge Management Focus	ES Lifecycle Phases	Stakeholder Group	Theory	Empirical Evidence
Baskerville et al., 2000	Impact of ERP on organizational knowledge	Implementation, post-implementation	Vendor consultant, power user	Grounded Theory, Cognitive Map	No
Lee and Lee, 2000	ERP implementation from knowledge transfer perspective	Implementation	User	No	No
Pan et al., 2001	Knowledge integration during ES implementation	Implementation, post-implementation	Internal and external (supplier, project consultant, contractor)	No	No
O'Leary, 2002	The use of KM to support ERP	Implementation	No	No	No
Newell et al., 2003	Interaction of ERP and KM	Implementation	Project Sponsor, steering group, project team, end user, consultant (vendor)	No	Explores the impact of ERP and KM on organizational efficiency
Jones and Price, 2004	Knowledge sharing during ERP implementation	Implementation	ERP implementation team	No	No
Volkoff et al., 2004	Knowledge transfer from ES developer team to users	Implementation, post-implementation	Power user, ES team	No	No
Gable, 2005	Lifecycle-wide knowledge sourcing strategy to support ES investment	Implementation, post-implementation	Client, vendor, consultant	No	No
Jones, 2005	Sharing tacit knowledge among ERP project team	Implementation	ERP implementation team	No	No
Ko et al., 2005	Knowledge transfer from consultant to client	Implementation	Consultant, client, employees, IS manager	Integrated Theory Approach	Established the antecedents of knowledge transfer
Worley at al., 2005	Integration between knowledge human resource and other characteristics in ERP	Implementation	User	No	Analyses the correlation of knowledge to improve the adoption of ERP systems.
Jones et al., 2006	Knowledge sharing in ERP implementation	Implementation	No	No	No
Newell et al., 2006	Knowledge integration in large-scale implementation project team	Implementation	Project team, consultant, user	No	No
Xu, et al., 2006	Interaction of KM and ERP in system perspectives	Implementation	No	No	No
Li et al, 2006	KM system to manage knowledge of ERP implementation process	Implementation	Consulting company, vendor, implementer	Theory of KM	No
Li et al, 2006	Design issues of ERP systems in the knowledge-based economy environment	Implementation	No	No	No
MGnnis and Huang (2007)	Incorporation of KM into ES implementation	Implementation, post-implementation	No	Knowledge theory	No
Pan et al, 2007	Knowledge sharing and integration during ERP adoption process	Implementation	Project team, steering committee	No	
Srivardhana and Pawlowski, 2007	Relationship between ERP system and innovation from knowledgebase perspective	Implementation, post-implementation	Consultants, user	Organizational Knowledge, Organizational Memory	No
Wang et al., 2007	Knowledge transfer during ES implementation	Implementation	Consultant, client	Knowledge Stock-Flow Theory, Organizational Learning	Investigates the relationship between consultant competence, the client's absorptive capacity, knowledge transfer and eventual ERP process fit.

Table 3. Knowledge Management (KM) for Enterprise Systems (ES) Studies

To our best knowledge, Adaptive Structuration Theory (AST) is the most accommodative theory in order to explain the impact of KM on ES. However, the table also shows the use of other theories in the selected studies. Conversely, we argue the use of the theories in terms of the suitability in relations to research in KM and ES perspectives. For example, Organizational Knowledge and KM theories are not representing the knowledge in ES accurately. The reason is, the theory is too limited, focuses only on KM perspective without consideration on ES side. The number of studies is limited and the majority of the research to date has focused on Knowledge Management issue or Enterprise Systems separately. To our knowledge, no other empirical studies have directly investigated the impact of KM on ES. From the table, it seems that empirical evidence for the relationship between KM and ES is the most crucial part. The data shows that only 4 of them give evidence on the correlation between these two areas, while the rest of the studies are not.

5 CONCLUSION

This study proposes a research model based in Adaptive Structuration Theory to understand the impact of knowledge on Enterprise Systems. The theoretical model recognizes that: managing knowledge for Enterprise System is an on-going lifecycle-wide activity beyond the implementation, where generated knowledge is used, improved and re-used, with the involvement of many stakeholders of the lifecycle. Moreover, the path model facilitates a cumulative tradition of research where future can further expand our understanding of this phenomenon with now having the potential to assess the impact of knowledge management on contemporary IS. The paper introduced the key notion of an ES-knowledgebase, where the ES-knowledgebase is created in the phases of *creation*, *retention*, and *transfers*, with each phase making a unique contribution to the *ES-knowledgebase* which is thereafter *applied*. It was also argued that the establishment and maintenance of an ES-knowledgebase is an important goal – When engaging external parties, organizations typically have goals that go beyond the successful implementation of the new system; they also have the less tangible goal of acquiring knowledge pertaining to implementation, operation, maintenance, and training.

In applying AST in this research context, we managed to: (1) depict the dynamic nature of the interaction between the ES-knowledgebase and Enterprise Systems, (2) identify possible sources of ES-knowledgebase, and more importantly (3) demonstrate how the users engage in the ES-knowledgebase when they interact with the Enterprise System. Using the appropriation concept, it was theoretically established that the term interaction goes beyond the simple "usage" notion. Moreover, using a meta-analysis of prior literature, the authors the demonstrated the value of the new conceptualisation and its contribution to research. The researchers are in the process of conducting case studies to identify and confirm the structures, sources of structures and the appropriation for the study context.

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